

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-6. (cancel)

Claim 7. (currently amended) A method for joining at least two fabric layers, comprising the steps:

providing at least two fabric layers;

measuring the initial thickness of said at least two fabric layers and calculating therefrom a desired joint thickness for a joint made by joining said fabric layers with a selected adhesive;

saturating at least facing surfaces of the fabric layers with ~~[[an]]~~ said adhesive;
providing an adhesive film between the fabric layers; and

applying heat and pressure to the fabric layers until a thickness of the joined fabric layers is reduced to not more than ~~a predetermined optimal~~ said desired joint thickness ~~for a joint of desired quality~~.

Claim 8. (Original) The method of claim 7, wherein the step of providing fabric layers comprises:

providing at least one fabric layer that includes fibers having a tenacity of 10g/denier or higher.

Claim 9. (Original) The method of claim 7, wherein the step of providing at least two fabric layers comprises:

providing at least one fabric layer consisting of woven yarns including fibers having a tenacity of 10g/denier or higher.

Claim 10. (Original) The method of claim 7, wherein the step of providing at least two fabric layers comprises:

providing two fabric layers including woven yarns that each include fibers having a tenacity of 10g/denier or higher.

Claim 11. (Original) The method of claim 7, wherein the step of providing at least two fabric layers comprises:

providing a first fabric layer having woven yarn and first a degree of crimp; and

providing a second fabric layer having woven yarns and a second degree of crimp.

Claim 12. (Original) The method of claim 7, wherein the step of providing at least two fabric layers comprises:

providing a first fabric layer that has a first degree of crimp in a section to be joined to a second fabric layer and has a second degree of crimp in a portion not joined to the second fabric layer.

Claim 13. (Original) The method of claim 7, wherein the step of providing at least two fabric layers comprises:

providing two fabric layers and a tape fabric layer.

Claim 14. (Original) The method of claim 13, wherein the two fabric layers include airship hull sections and the tape is used to join the hull sections together.

Claim 15. (Original) The method of claim 7, wherein the step of saturating at least facing surfaces comprises:

applying an adhesive to the fabric layers so that the adhesive encapsulates fiber bundles, but does not fully penetrate fiber bundles in the fabric layers.

Claim 16. (Original) The method of claim 7, wherein the step of saturating at least facing surfaces comprises:

applying an isocyanate-based urethane to the fabric layers.

Claim 17. (Original) The method of claim 7, wherein the step of providing an adhesive film comprises:

providing an extruded or cast resin film between the fabric layers.

Claim 18. (Original) The method of claim 7, wherein the step of providing an adhesive film comprises:

providing a cast or extruded urethane film having a thickness of at least 1.0 mm.

Claim 19. (Original) The method of claim 7, wherein the step of providing an adhesive film comprises:

providing an adhesive film having a thickness of at least 2 mm to a tape-type fabric layer.

Claim 20. (Original) The method of claim 7, wherein the step of providing an adhesive film comprises:

providing bonding agents in the adhesive film that are activated after exposure to a temperature above 300° F for a time of greater than 30 seconds.

Claim 21. (Original) The method of claim 7, where the step of applying heat and pressure comprises:

heating an adhesive film to a temperature near the melt point of the adhesive.

Claim 22. (Original) The method of claim 7 further comprising the step of applying a cold press cycle to said fabric layers wherein at least 100 psi of pressure is applied to said fabric layers until said layers cool to about ambient temperature.

Claim 23. (Original) The method of claim 7, wherein the step of applying heat and pressure comprises:

heating a urethane film to a temperature near 350° F.

Claim 24. (Original) The method of claim 7, wherein the step of applying heat and pressure comprises:

applying pressure to the fabric layers so that adhesive in the adhesive film is squeezed into open spaces in the fabric layers.

Claim 25. (Original) The method of claim 7, wherein the step of applying heat and pressure comprises:

applying a pressure of at least about approximately 100 psi to the fabric layers.

Claim 26. (Original) The method of claim 7, wherein the step of applying heat and pressure comprises:

applying heat and pressure to the fabric layers for a time between 30 and 60 seconds.

Claim 27. (Original) A method for joining at least two fabric layers, comprising the steps:

providing at least two fabric layers;

saturating at least facing surfaces of the fabric layers with an adhesive;

providing an adhesive film between the fabric layers;

applying heat and pressure to said at least two fabric layers so as to form a joint thereof;

monitoring the quality of said joint for voids in the adhesive; and

adjusting at least one joint formation parameter whereby said voids in the adhesive between the joined fabric layers are eliminated and avoided, said joint formation parameters comprising a group including adhesive film thickness, fabric layer weave openness, adhesive heating temperature, pressure applied to the joint during formation, a time that the adhesive is maintained near its melting point, and a time that pressure is applied to the fabric layers.

Claim 28. (Original) The method of claim 27, wherein the step of monitoring the quality of said joint for voids comprises:

obtaining optical images of said joint indicative of opacity and clarity of weave pattern resulting from fiber and adhesive interface within said joint;

comparing said opacity and clarity of weave pattern in said optical images with that of a control image of a joint sample of desired quality, and

calculating the quality of said joint therefrom.

Claim 29. (Original) The method of claim 27, wherein the step of adjusting at least one joint formation parameter comprises:

applying a pressure of at least about approximately 100 psi to the joint.

Claim 30. (Original) The method of claim 27, wherein the step of adjusting at least one joint formation parameter comprises:

maintaining pressure on the joint for a time greater than 10 seconds.

Claims 31 - 33. (cancel)

Claim 34. (currently amended) A method for joining at least two fabric layers, comprising the steps:

providing at least two fabric layers;

measuring the initial density of said at least two fabric layers and calculating therefrom a desired density for a joint made by joining said fabric layers with a selected adhesive;

saturating at least facing surfaces of the fabric layers with an adhesive;

providing an adhesive film between the fabric layers; and

applying heat and pressure to the fabric layers until a sample of the joined fabric layers is reduced to not more than ~~a predetermined optimal~~ said desired density for a joint of desired quality.

Claim 35. (Original) The method of claim 34, wherein the step of providing fabric layers comprises:

providing at least one fabric layer that includes fibers having a tenacity of 10g/denier or higher.

Claim 36. (Original) The method of claim 34, wherein the step of providing at least two fabric layers comprises:

providing two fabric layers extending in opposing directions from said joint and a tape fabric layer confined to said joint.

Claim 37. (Original) The method of claim 36, wherein the two fabric layers include airship hull sections and said tape fabric layer is used to join the hull sections together.

38. (Original) The method of claim 34, wherein the step of providing an adhesive film comprises:

providing bonding agents in the adhesive film that are activated after exposure to a temperature above 300° F for a time of greater than 30 seconds.

Claim 39. (Original) The method of claim 34, wherein the step of applying heat and pressure comprises:

applying a pressure of at least about approximately 100 psi to the fabric layers.

Claim 40. (Original) The method of claim 34, wherein the step of applying heat and pressure comprises:

applying heat and pressure to the fabric layers for a time between 30 and 60 seconds.

Claims 41- 48. (Canceled)